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ABSTRACT

While most information dissemination activity in education is taking place at the national level within systems that emphasize documents, such as ERIC, the most important developments for individual teachers should take place at the state and local levels. SEEKER III, a local automated system in Michigan, is tied in with the Michigan Department of Education to diffuse information about innovative teaching projects. This on-line interactive system, which is accessed by a variety of commands to search for appropriate documents, contains a variety of special features which tailor its functions to fit its special objectives. (Author/KP)

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NOVEMBER 1977

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INTRODUCTION

Since the 1950s a wide variety of information has been placed into computer storage and made immediately accessible via computer terminal. Both private companies and public agencies supply business, industry, science and education with this type of information service.

My interest is in education and the information services that are most easily available to individual teachers. ERIC was the only automated system I knew that serviced teachers' needs. However, ERIC is not easily accessible to teachers since it is usually available only at major libraries or regional educational centers, not through an individual school district or school. I heard about a new system, called SEEKER, being developed at Macomb Intermediate School District in Mt. Clemens, Michigan. This system was apparently intended to provide information services directly to each school. Thus, this paper began as a detailed examination of the SEEKER system.

However, a search for information about other similar projects yielded no current articles or documents. The only ongoing activity I could discern was taking place here in Michigan with the development of the SEEKER project.

While trying to locate information about other working information system, I read discussions of the problems of information dissemination in education. One major problem is the lack

of development at any but the national level. So, the subject of this paper has expanded to include a brief discussion of the problems of information dissemination in education, as well as an analysis of the working system in Michigan.

I. DEVELOPMENT OF INFORMATION DISSEMINATION PATTERNS IN EDUCATION

Educational institutions in the United States have often been heavily criticized by various sectors of the population. This continues to be true. Each critic wants education to change in some way.[1] Educators themselves call for new ideas in teaching. The sudden scientific advances made by the Russians, as evidenced by the launch of Sputnik in the 1950s, resulted in much self-examination in the educational community. In order to facilitate change, there have been increased attempts to understand the processes by which changes are accomplished.[2] It has been found that information about new developments have been simply allowed to diffuse throughout the educational community, without any systematic approach, on the assumption they would reach and affect individual practitioners.[3] But this diffusion approach was not successful, as education has had the slowest diffusion rates when compared to industry, medicine, or agriculture.[4] The current view is that education has needed systematic, planned diffusion of knowledge of innovations.[5] Many agencies have become interested in developing their own dissemination system. But, in order to develop a system one must first under-

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[1]H.S. Bhola, Diffusion of Educational Innovation. (Morristown, N.J.: General Learning Press, 1977) pp. 1-2.

[2]Ibid., p. 9.

[3]Ibid., p. 11.

[4]A.M. Huberman, Understanding Change in Education: An Introduction. (Paris: UNESCO, 1973) p. 33.

[5]Diffusion, p. 2.

stand the development of the current system, if it can be called that, and the information needs and biases of the intended users. Specialists have spent much time studying both.

Many reasons are suggested to explain why education lags behind other fields in developing systematic diffusion of innovations. One significant consideration is education's humanistic, rather than scientific, traditions. Educators have not worked under the need to use theories supported by objective documentation. Rather, they have tended to depend on intuition to develop new ideas.[6] Thomas Clemens, speaking as Chief of the Research Utilization Branch of the United States Office of Education, indicates that the first true educational experiment in this country was conducted only seventy years ago. The experimenter tested two methods of teaching spelling to children to determine which was most effective. His more traditional professional peers disparaged this research because they did not believe one could determine how well children spell by observing how well they spell![7] In comparison, science has a history of objective research extending from the time of Aristotle in the fourth century B.C..

Studies have shown that even now teachers do not always trust objective results of research and do not perceive such information as being of value to them in dealing with educational problems.[8] There is justification for

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[6]Quick-Time Education Information Retrieval in Wisconsin. (Bethesda, Md.: ERIC Document Reproduction Service, ES 002 164, 1968) p. 2.

[7]Thomas Clemens, Information Transfer and Research Utilization in Education. (The edited transcript of an address given before the staff of the Michigan Department of Education, July 14, 1969.) (Bethesda, Md.: ERIC Document Reproduction Service, ED 039 005, 1970) p. 9.

[8]Ibid., p. 10.

this attitude. Attempts to relate the process of change in education to the Research-Development-Dissemination model used in business and industry have revealed many problems. There had been very little research at all and the research available did not deal with actual teaching problems.[9] In addition, research results were not being developed into teacher-useable programs or materials.[10] And, the claims of benefits resulting from some research were later found to be invalid.[11] Also, use of research information in education does not usually result in tangible rewards for either student or teacher. A farmer may use knowledge of a new technique to directly increase his per acre yield, which is obviously of direct benefit to the farmer. But teachers receive no personal benefits, such as pay increases, through use of innovative practices.[12] One may not even be sure that an innovation has benefited one's students since current methods of evaluation make it difficult to make such positive correlations.[13]

Teaching personnel, for a variety of reasons, typically resent institution of changes without their participation. Such changes are considered outside interference. Researchers are not a part of the local school community, neither are the change agents who try to provide communication between teachers and researchers. So knowledge developed from research is also suspected as outside interference and teachers resist its adoption.[14] A program

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[9] Diffusion, p. 11.

[10] Ibid.

[11] Understanding Change, p. 27.

[12] Ibid, p. 29.

[13] Information Transfer, p. 9.

[14] Understanding Change, p. 26.

adopted under such conditions may be thought to benefit other persons, but not the teacher or students.[15]

Experts suggest a multitude of other reasons for education's lack of systematic knowledge diffusion. Many concern the school's position and purpose in society and the individual teacher's position within the school. Education is structurally and functionally different than other fields and this contributes to the differences in communication development.[16] However, the focus of the preceding discussion has deliberately been those factors which concern the nature of the information to be disseminated and the nature of the individuals sending and receiving the information. The problems that were pinpointed in these two areas are those which can be most easily changed and directly affect the success of systematic diffusion. If studies show that classroom teachers mistrust change agents from another level in the educational hierarchy, then the system must develop a method to overcome or circumvent the problem. Thus, definition of such problems will help system designers determine the needs of educators and the necessary objectives of the system. Information needs can also be determined in another way; through analysis of actual user patterns or determination of user-perceived needs.

Behavioral studies have shown that teachers use various kinds of information to make various kinds of decisions. Information is often used to justify work that has already been finished. Daily tasks, presumably record keeping and the like, are accomplished through the use of another kind of information. Still other varieties are used to evaluate accomplishments or

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[15] Information Transfer, p. 10.

[16] Understanding Change, pp. 26-33.

implement educational change. And another type of information may persuade an educator to change his or her views of basic educational concepts.[17]

Examination of the decision-making process in adopting an innovation has also shown that different kinds of information are used by the adopter at specific stages of the process. At the initial stage one becomes aware of an innovative practice through superficial information that may be found in technical or mass media reports or in descriptions of actual use by previous adopters. If an individual is interested enough by the brief information available, more detailed information may be sought so that person can judge the value of the innovation. Next will be a desire for more detailed information about the innovation itself and the situation in which it was used. Depending on the kind of information user being analyzed, the user may use bibliographies to locate primary information or try to communicate with previous adopters. Now the individual uses the accumulated resources to evaluate the innovation. At this point, interpersonal contacts are heavily used. If the innovation is deemed worthwhile, it is adopted for trial use. Interpersonal communication is even more important than before. Interpretive information concerning this or similar innovations can be equally as important. At this point, the final decision is made in favor of or against adoption of the new practice.[18]

From other studies, generalizations have been made about patterns of information use. First, as already seen, an individual uses a variety of types

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[17] Information Transfer, p. 2.

[18] Ibid., pp. 3-4.

of information while performing a variety of educational functions and roles. Another generalization concerns the relationship of information accessibility to a person's use of information. Ease of access is so important that people will accept and use the information that is easiest to locate even if they themselves think it is not very good information. Several other items pertain directly to education. It has been found that teachers who do use information depend heavily on interpersonal contacts and visitations for supportive information. Also, educators typically avoid information which is contrary to their ideas and plans. Finally, as discussed previously, teachers tend not to trust or use objective information.[19]

A study by the Far West Laboratory for Educational Research and Development examined what educators themselves want as regards information services and resources. Most important to them was the previously mentioned ease of access. The next requirement was for current information. Third in importance was comprehensive coverage of the subject so the user need not use more than one information center. Fast responses to questions was placed fourth. A built-in evaluative system to ensure that the system disseminates valid information was also important, as was the availability of documentation for a reference and additional references on the desired subject. Finally, they felt a system should provide a flexible variety of services to meet their varying needs.[20]

Using all of the foregoing information one might describe some objectives to be met by an educational information system. The system would need

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[19]Ibid., pp. 7-10.

[20]Ibid., pp. 11-12.

to provide access to pertinent and valid research that has been translated into useable forms. There should be increased local involvement in the system to make it more acceptable to teachers. There must be easy access to a wide variety of information types and forms, including allowances for personal contacts. Adequate resources must be available, providing comprehensive coverage of the field. Also a variety of services should be available to assist users to satisfy more extensive information needs. Finally, all of this should be made available at a single location!

Development of such a system may seem improbable. But, the user studies have been taken very seriously by agencies trying to develop effective information systems. In two instances the results of the Far West Laboratory's user study were directly incorporated in the objectives of a proposed system. The Madison, Wisconsin school district, in a proposal describing a statewide dissemination project, cited every one of the user-perceived needs as necessary characteristics of their system.[21] And portions of the same statements appeared in the proposed objectives of a similar project in Michigan.[22]

Now that we have examined education's information needs, we must examine what organizations are already available and how well they respond to the needs described above. At this time, virtually all information dissemination activity is taking place at the national level within systems that emphasize documents, like ERIC or Phi Delta Kappa's School Research Information Service. It has been noted in a government evaluation of ERIC that national level networks cannot meet all the information needs of individuals

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[21] Quick-Time Retrieval, p. 2.

[22] George Grimes. A Proposed Educational Information System for the State of Michigan. (Bethesda, Md.: ERIC Document Reproduction Service, ED 039 000, 1970) pp. 23-24.

in education. Instead, we need a multi-level system of networks.[23] If we consider the discussion of proven user needs we realize that national networks alone, no matter how outstanding their service may be, could not possibly be sufficient. Research which is spawned and supported at the national level is not necessarily utilized at the local levels, and locally produced research, which Clemens calls "clinical information", does not easily find its way into the national systems, although it may be significant. National networks concentrate on document acquistion, which is a needed function, but a document is only one form of a variety of educational resources.[24] Which national network caters to the user's need for different types of information sources, for example, interpersonal contacts? The national networks are not designed to handle such resources. According to Clemens, as of 1969 there was not one educational network based on a response to user needs as described by the studies mentioned above.[25]

So, the most important developments for individual teachers should take place at the state and local levels. Educators and information specialists have been aware of this and proposed dissemination systems to fill the need. Pacesetters in Innovation, the ERIC publication of the late 1960s that indexed federally funded innovative projects, listed two such projects. One, the Madison Public Schools proposal, was to use IBM's Permuted Indexing System (KWIC) to provide automated retrieval of Title I and Title III projects and pertinent research and journal articles.[26] No further information has

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[23]Lee G. Burchinal. ERIC: Development Through June, 1968. (Bethesda, Md.: ERIC Document Reproduction Service, ED 020 450, 1968) p. 13.

[24]Information Transfer, pp. 19-20.

[25]Ibid., p. 15.

[26]Quick-Time Retrieval, p. 7.

been available about that project. The other system, proposed by Wayne County Intermediate School District in Michigan, was to use non-automated means to disseminate and promote innovative Title I and Title III projects.[27] This system, called ASSIST, was funded and operated from 1965 to 1968. The program was dismantled, but its essential concepts are continued at Wayne in a variety of other programs.[28]

The only current local activity brought to this writer's attention is taking place in Michigan. Several of the state's regional school districts and the Michigan Department of Education have worked to develop a local network called SEEKER. SEEKER is the subject of a later portion of this paper, therefore it will be sufficient at this time to say that it is an automated system currently providing information services to Macomb County schools, the State Department of Education and several regional school districts.

This seems to be the extent of activity at the local level. No further writings concerning other projects have been available nor do the Michigan people currently working with the SEEKER system know of other projects. The need for multi-level networks was discussed by Burchinal in the first evaluation of the ERIC national network, but that development is still not a reality for education.[29]

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[27] Project to Identify and Disseminate Outstanding Michigan Title III Programs. (Bethesda, Md.: ERIC Document Reproduction Service, ES 002 126, 1968) p. 1.

[28] Olga Moir, interview at Wayne County Intermediate School District, Wayne, Michigan, August, 1977.

[29] ERIC: Development, p. 13.

II. DEVELOPMENTS IN MICHIGAN

In comparison to the apparent lack of local developments elsewhere, Michigan agencies have been quite active in recent years. Admittedly, there has been little or no information about the Michigan projects in the national sources, my information having come from local sources. Therefore, it is difficult to judge the amount of activity elsewhere and compare it to the activity in Michigan since similar sources were not consulted in the case of other states.

However, there has truly been interest for a number of years in a local system to serve the needs of educators in the field. The ASSIST center, mentioned earlier, was initially proposed as a county-wide program but could have expanded into a state wide program. The county program operated in the late 1960s and continues even now, although divided into several programs.

There has been action at the state level also. In 1975-1976, the Michigan State Department of Education initiated the Michigan Adoption Program, MAP. MAP was designed to evaluate and publicize successful curricular innovations and promote their adoption in other Michigan schools. Dissemination consisted largely of distribution of information packages listing and describing several "Educational Programs That Work." School officials who were interested in a program could obtain more detailed printed information about that program or contact someone working with the original program or visit the demonstration site for detailed instructions on successful adoption.[30]

As part of the MAP project, four regional centers, Macomb, Wayne, Kalamazoo and Upper Peninsula, were given funds to develop various aspects or a

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[30] 25 Educational Programs That Work, (Michigan Department of Education, n.d.)

system to improve dissemination of MAP's innovative projects. Each regional center worked on a certain portion of the system, for example, educational specifications for the selection of projects or the packaging and presentation of information about the projects. Through this program Wayne County developed Project Value which is intended to inform Wayne County school districts about projects approved through one of four agencies. The four agencies are the National Diffusion Network, the Midwest Interstate Dissemination Consortium, MAP and Wayne County Intermediate School District itself, which approves locally developed projects. Information about these projects is available through Project Value at Wayne County and also through the automated SEEKER system at Macomb County Intermediate School District.[31]

In a recent position paper, the state board of education indicated its interest in improved computer services for education. The areas of concern include one called Instructional Support Services, which includes dissemination of curricular information such as innovative practices, instructional techniques and behavioral objectives.[32] Because of earlier interest in this area, Macomb Intermediate School District was given funding to aid in the development of a model automated communications system.[33] That model is SEEKER. The state's interest continues in this area, however, and its final recommendation is that a task force study the possibility of developing a state wide educational information system.[34] Thus, the general state of development in Michigan shows great promise for the future.

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[31]O. Moir and George Grimes, interview at Wayne County Intermediate School District, Wayne, Michigan, July, 1977.

[32]"Position Paper on Computer Services for Michigan Education," (Michigan Department of Education, 1976) p. 10.

[33]Ibid., p. 4.

[34]Ibid., p. 20.

III. SEEKER III - AN AUTOMATED EDUCATIONAL INFORMATION NETWORK

DEVELOPMENT OF SEEKER III

SEEKER III is a computerized two-way communications and interactive information dissemination system. It consists of a data bank of information stored on magnetic tape and a series of computer programs, called the operating program, that regulate access to the data bank. It has become operational in the last year and is currently accessible at twenty-one school districts in Macomb County, several Michigan regional centers, the State Department of Education and several out-of-state locations including the United States Office of Education.[35]

SEEKER III was preceded by SEEKER I and SEEKER II, which were also interactive systems but were intended to meet slightly different objectives than SEEKER III. SEEKER I was developed because its designers wanted educators to have access to a fast, easy-to-use information system such as was already available in other fields. It was originally intended for use by state education departments and national communication associations. But it was capable of a variety of functions which were found to be easily used in communications between the intermediate district and local districts. In 1974 it was used during a county-wide school election to coordinate administration election strategies. Given terminals, local administrators used SEEKER to send questions or information to other terminal users. The intermediate district sent information to the districts daily, requested information from them and even

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[35]William J. Banach, interview at Macomb Intermediate School District, Mt. Clemens, Michigan, August, 1977.

conducted opinion polls through SEEKER.[36]

SEEKER II was an expansion of the SEEKER I pilot program. The objective was to use it as a means of two-way communication at the local and regional level. After initiation the system was used to provide districts with general educational news, a calendar of pertinent events in Macomb County and packages of information on specific educational topics by request. It was also used, as SEEKER I before, to conduct polls of participants. The response of participating schools was so overwhelming, department personnel could not handle the overload and, although the system itself was working below capacity, SEEKER II was cancelled.[37]

SEEKER III came about with the help of the State Board of Education when it bolstered the intermediate school's funds with a grant to fund development of an effective means of distributing information about innovative projects. Now, all of the projects identified through the Michigan Adoption Program are available on-line through SEEKER III, although information about them is also distributed in conventional print and non-print forms.

Projects identified by the United States Office of Education National Diffusion Network, coming from schools in other states, will also be put into the system. As mentioned previously, Project Value at Wayne County Intermediate School District includes projects validated by the Midwest Information Dissemenation Consortium. One suspects that these projects will also be entered into Seeker. Soon some special project information in specific curriculum areas, such as special education or vocational education, may be

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[36]William J. Banach and Thomas Hartsig, "SEEKER, Communication by Computer," AEDS Monitor, (September 1974).

[37]Banach, interview.

added to the data bank.

SEEKER's developers indicate that its capabilities are not fully developed and can be expanded in a variety of areas to provide increased information services to local educators. For example, a file of consultants could be maintained for fast access as needed. Or selective dissemination of information (SDI) services might be provided, for example, in the area of legislation concerning education. In this case, however, school districts could respond through the system to action taken by government bodies.[38] Many other possibilities exist, however, in the next portion of this paper we will concentrate on the use of SEEKER to disseminate information about innovative practices and as a vehicle for two-way communication between local educational agencies.

TECHNICAL DESCRIPTION OF SEEKER III[39]

Unit Record. Specific information about each project must be available to users in some regular format. The format in an automated data bank is called a unit record. The unit record consists of several fields each of which is filled only with certain types of information. A unit record in SEEKER consists of the fields indicated in Table 1.

Table 2 contains a sample print-out of a project unit record. Each field is filled with appropriate information. Notice that the entire record is actually printed in two separate portions under different headings.

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[38]William J. Banach, unpublished report, n.d.

[39]Rich Sheridan, interview at Macomb Intermediate School District, Mt. Clemens, Michigan, August, 1977.

TABLE 1

UNIT RECORD FORMAT

*Acronym of project title (if available)

*Full title of project

*School district

*Location

**Brief description (identified with unique item number)

**Project abstract (identified with unique item number - consists of the following sub-fields)

Description of project	(fuller explanation than above)
Target audience	(indicates level and type of student project encompasses and/or professional persons to be involved)
Materials	(those required to run the project)
Financial requirements	(requirements to run the project)
Adoption Criteria	(minimum conditions for successful adoption of project)
Program evaluation	(self-evaluation method used)
Adoption services	(assistance from project developers)
*ERIC descriptors	(those assigned to describe project)
Contact	(individual among developers who can be contacted for assistance)
Local Contact	(intermediate school district contact)

*directly searchable fields
**searchable only by item number

TABLE 2

SAMPLE UNIT RECORD

RIP
READING IMPROVEMENT PROJECT
Napoleon School District

Elementary Teachers and administrators are trained to use a number of teacher behaviors which the Exemplary Center for Reading Instruction, Salt Lake City, Utah found to be critical for improved student achievement. The trainees also learn a classroom management system which enables the teacher to spend 100% of classroom time in direct, intensive instruction without teacher aides.

FOR MORE INFORMATION ABOUT THIS PROJECT, SEE THE PROJECT ABSTRACT IN ITEM #267.

Item 81 [AA/A1]

TABLE 2 - Continued

RIP
Reading Improvement Project
Napoleon & Northwest School Districts
Jackson, Michigan

DESCRIPTION

The Reading Improvement Project is based on techniques developed at the Exemplary Center for Reading Instruction in Salt Lake City, Utah. Through ten years of research, the E.C.R.I. has identified certain teacher behaviors as critical for preventing reading failure. These techniques have been woven into directives for teaching word recognition, comprehension and study skills, spelling, penmanship, dictation and creative writing.

The goal of the Reading Improvement Project is to increase reading performance for all students, K-6 in the regular classroom. Through inservice training and on-site technical assistance, teachers and administrators learn behaviors which encompass a range of reading strategies and classroom management techniques.

TARGET AUDIENCE

K-6 classroom teachers, administrators, and reading support personnel.

MATERIALS

Installation manual, two installation notebooks containing pads for training. District developed material.

FINANCIAL REQUIREMENTS

Materials approximately $60 per trainee or adopting district. Consultant/technical assistance $150 per day per demonstration staff member plus expenses. Evaluation visit by demonstration staff member to adopting district, $150 per day plus expenses.

ADOPTION CRITERIA

The Reading Improvement Project recognizes the following levels of commitment as a necessity for successful adoption:

Awareness: Submission of a letter of interest to the Michigan Department of Education incorporating needs analysis of the district and a description of the needs within a district which the Reading Improvement Project will fulfill. At this time, the Reading Improvement Project would also acknowledge an on-site visitation request.

Item 267 [AA/A1]

TABLE 2 - Continued

Knowledge: An on-site briefing, classroom observation and discussion with personnel from potential adopter district. Personnel required should include classroom teachers and building administrators, superintendent and/or person responsible for curriculum within district.
Decision: Acceptance of installation criteria and writing of the statement of assurance with project director to the Michigan Department of Education. Prior experience and research has shown that for a project to be successfully adopted, the district personnel to be trained should consist of the following (1) a project facilitator; (2) building administrator; and (3) staff members.
In addition, the adopter district should show commitment by allocation of finances required for pre-post testing materials, technical assistance and facilitator time.

PROGRAM EVALUATION

Project facilitator, reading support persons will administer the evaluation instruments using a written questionnaire, classroom observation, personal interviews and student pre-and post-testing.

ADOPTION SERVICES

A four day training session will be held on-site. Training days will be consecutive. After implementation, three visitations will be made to assist adopter by offering technical assistance.

ERIC DESCRIPTORS

Classroom Techniques, Creative Writing, Elementary Education, Handwriting, Inservice Education, Language Skills, Performance, Reading, Reading Improvement, Reading Skills, Spelling, Study Skills, Teacher Behavior, Teaching Techniques, Teacher Training.

CONTACT

June Poleski, Project Director
Reading Improvement Project
212 E. Avenue
Napoleon, MI 49261
(516) 536-8639

LOCAL CONTACT

For more information about this project, contact SUE JAVID or GENE YAX, Instruction Department, Macomb Intermediate School District.

Item 267 [AA/A1] PAGE 2

File Structure. SEEKER's internal file structure is based on three separate files. The unit record, as described above, does not exist as a whole in any one file. Rather, its parts are distributed between the "project information file" and the "news information file". The third file is called the "ERIC descriptor file".

The ERIC descriptor file contains 5000 terms, taken from the ERIC thesaurus, that are organized in alphabetical order. From this list an indexer assigns appropriate terms to each project. Currently, 350 terms are "live", or being used to describe a project. Geographic terms will be added to these ERIC descriptors since out-of-state projects will be added to the data base and geographic terms are not included in the ERIC thesaurus. Soon a list of live descriptors will be available on-line so users will not need a hard copy of the ERIC thesaurus to select descriptors.

The descriptor file is an inverted file. Each descriptor is tagged with the numbers of projects indexed with that term. The file is directly searchable only by ERIC descriptor. When doing a search of SEEKER using ERIC descriptors this file is searched until the specified descriptor is found. The project tags are counted and indicated to the user as postings. The next step of the search, obtaining specific information about the posted projects, takes place in the project information file.

The project file is a linear file organized in number order by project number. It contains only a few fields from the unit record. These are the project number, project acronym, project title and school district. These fields are of fixed length, holding up to seventy-two alphabetic characters. One can search the file by project number or free term in the title, acronym or district fields.

If one completes an ERIC search, receives postings and requests the hits be printed, the computer must switch from the descriptor file to the project file. The project numbers tagged to the descriptors are located in the project file and the fields described above are printed for each hit. These fields together do not constitute the complete unit record. Therefore, a list of "item numbers" and their associated titles are tagged to each project number and are printed at this point. These items contain more information from the unit record but are accessed through another file, the news information file.

The news file is also a linear file, arranged in number order by item number. It is searchable only by item number. Two fields from the unit record are given unique item numbers, the brief description field and project abstract field. One would have to request both items to receive an entire unit record. Any additional information about a project, which is not part of the unit record, may be given a unique item number and tagged to the project number.

The system is designed so a user can stop the search at any time after receiving as much information as desired about a project. For example, after reading the brief description of three projects, a searcher might be able to eliminate two projects from consideration and concentrate on the third. More complete information, the project abstract, would be requested for this project.

Table 3 is an example of a search through all three files that would yield a print-out of the unit record shown in Table 2.

TABLE 3

SAMPLE ERIC SEARCH

Search Steps	Search Location and Action
.=⟩ ERIC	To access the descriptor file.
Descriptor=⟩ELEMENTARY EDUCATION 19 Projects Qualify	SEEKER searches for this term in descriptor file; project tags are counted and posted.
Descriptor=⟩READING And/Or=⟩AND 5 Projects Qualify	Same search procedure; results of the two searches are combined using either and/or. Qualifying tags are posted.
Descriptor=⟩(CR)	If no more terms are desired, a carriage return will end the search in the descriptor file
Do you want a listing of the qualifying projects? Type yes or no=⟩YES	Answer "yes" and one qualifying project will be printed from the project information file. More hits could be printed from the same file on request.
PJT NO. TITLE 27 RIP Reading Improvement Project by Napolean School District	
Do you wish to continue? (Type yes or no)⇒ NO	
=⟩PRO-27	This will search project information file, printing a few fields and item number tags. See Table 2, page 18 for the complete print-out.
RIP Reading Improvement Project Napolean School District . . . See the Project Abstract in Item 267.	

TABLE 3 - Continued

Search Steps	Search Location and Action
= Item)267	Search is conducted in news information file.
Linefeed to top of form and hit carriage return.=)	At this point the project abstract, seen on pages 6 and 7, will be printed.

SOURCE: Macomb Intermediate School District, Mt. Clemens, Michigan, "ERIC," April 1977. (Mimeographed.)

System Features. SEEKER is intended to be an on-line communications system for educators. Therefore, its operating program has features that tailor the system for educators' use.

The operating program, in a variety of ways, obviously restricts the action a searcher may take. One suspects this was done because the intended users will be primarily educators, not expert on-line searchers. If this was the designers' decision it seems to have been a wise one since the idea is to make information easily accessible in as few steps as possible. By limiting the options a beginning searcher may use, fewer complications will be encountered making the system all the more convenient and attractive to use.

One of the most obvious restrictions is the use of a precoordinated vocabulary. This is in no way unique to this system, being used in a variety of other systems for a variety of reasons. In this case, a proven vocabulary already existed in the ERIC thesaurus. Time-consuming and fruitless searches using educational jargon or synonymous terms are eliminated. If the project indexing is done well, searchers will presumably be able to

make fast, accurate searches, obtaining all pertinent records and not missing any because of misspellings or incomplete descriptors. It would be easy for an inexperienced searcher to forget the various forms of a descriptor; for example, singular, plural, or different word order in a multi-word term.

Another reason for avoiding natural language descriptors is the nature of the information contained in the unit record. The record is simply a brief English language description of objectives, means and financial and physical considerations relating to each project. There is little use of educational terms so there are really not enough descriptive keywords which could be drawn from the text for indexing purposes. For the same reason, a free text search capability would be useless in this system. Indeed, one learns the designers chose not to permit free text searching for just this reason.

Now that a case has been made against free text searching, it may be surprising to recall a previous statement which said free text searches are possible in three fields. These are the project acronym, title and district fields located in the project file. The reason one can free text search these fields is that it is very possible an educator will recall hearing of a good elementary mathematics project used by the Menominee schools. The individual may simply search the project file on the word "Menominee" which would probably be included in the school district field. Similarly, one might recall and search the title or acronym of a program. Titles like RIP, PRIDE or LEADERS catch and hold one's attention and could be accurately recalled for an exact search.

Returning to the discussion of restrictions, it is interesting to examine various features of the operating program. One can see that these features guide a searcher through an efficient search. For example, when doing an ERIC search, only one descriptor can be entered and searched at each step. There is no way to link descriptors by using boolean operators. Following the Descriptor=> prompt one enters a single term. The program searches for that term and postings are shown. A second term can only be entered after a second prompt. The program searches for this term but no postings are printed, instead, a new prompt appears, AND/OR=> . Only at this time can the searcher link terms to either expand or limit the search. Thus, the searcher never deals with parentheses or the order in which the system handles boolean operators. The possibility of a bad search due to a poorly phrased search statement is eliminated. The sequence of prompts and descriptors should make the user pause at each step of a search and consider what each boolean operator will do to the search. Perhaps the sequence itself will eliminate further errors. The search procedure seems quite time consuming when compared to the more customary search procedures found in other systems. Apparently, shorter search time was deemed less important than a good search.

Two prompts used in an ERIC search were mentioned earlier. They are typical of the prompts used throughout the operating program. An examination of the prompts listed in Table 4 will show they are all virtually straight English language sentences. There is little possibility of misunderstanding them. Once one has accessed the ERIC descriptor file the DESCRIPTOR=> prompt appears as needed instead of the plain SEEKER prompt (=>). The user is never at a loss as to what action the program is set to expect next. The postings statements, as seen in numbers 4 and 5 in the

TABLE 4

PROMPTS

1.	=⟩
2.	DESCRIPTOR=⟩
3.	AND/OR=⟩
4.	NO PROJECTS ARE TAGGED TO THIS DESCRIPTOR
5.	(N) PROJECTS QUALIFY
6.	DO YOU WANT A LIST OF QUALIFYING PROJECTS? (TYPE YES OR NO)=⟩
7.	DO YOU WISH TO CONTINUE (TYPE YES OR NO)=⟩
8.	LINEFEED TO TOP OF FORM AND HIT RETURN=⟩

chart, are complete statements rather than simply a number and descriptor. After a successful search the searcher is not left to ponder what to do next, but is automatically directed by the question in prompt number 6. At certain points after an ERIC search is completed, successfully or not, prompt number 7 appears so the searcher can indicate whether he/she wants to begin another ERIC search or exit from the ERIC file.

The last prompt in Table 4 surely must seem unusual. This prompt does not exist to help direct users but to further the information dissemination objectives of SEEKER. Remember, SEEKER is not a referral system directing users to search other reference tools for detailed information on which to base decisions. When a search is successful, complete project information is printed right at the user's terminal for immediate use. One user in each agency is charged with distributing information from SEEKER to other appropriate associates. To facilitate the dissemination process, SEEKER eleminates the need to retype information by printing it in a predetermined

format ready for copying and distribution. Items from the news information file are printed in an 8½ inch by 11 inch page format after the user line-feeds to the top of the next page, as directed by the prompt.

The major objective of SEEKER is to be a two-way communications system. To meet this objective the system has commands which allow one to put information into the system, format it on-line by using an editing program and route the information to specified persons or agencies. The exact method of doing this will be explained later. At this point SEEKER's routing features will be discussed.

Routing capabilities in SEEKER are not the same for every user. There is a five level hierarchy of user priorities. The first level of users are the "call only" users. These users may access any information their agency is allowed to see but cannot route any information through the system.

At the next level are the "send/call" users. This level can access all designated information the same as "call only" users and can also use the editor to put information into the system and route it as desired. Their information may be tagged to something called project MEMO, which is not really a project but simply a vehicle for information routing. These pieces of information are given item numbers and can be accessed only by the item number. However, these are not a permanent part of the data base; they are kept on-line a maximum of three weeks.

Users at the next level are those with "receivership" responsibilities. They have all the on-line capabilities of the first two levels but are also linkers and so are responsible for examining new information daily and routing it to appropriate persons. By using the command *NEW, the new items will be printed in a predetermined routing sheet format. A heading indicates the

date the item was included in the system and the agency which entered it. The routing for each item is determined by the agency which inputs the item at the time it is entered into the system. After all such new items are delivered to the linker for an agency they are changed to old items by the program and no longer appear on the *NEW printouts for that terminal.

At the next level are the "project managers." Again, this level has all the on-line capabilities of previous levels and some additional ones. Project managers can input information and tag it permanently to any project in the data base; they are not limited to project MEMO. Information added to projects is evaluated and validated to guarantee its quality in relation to the original project information. All the project managers are located within the Macomb Intermediate School District to ensure strict control over the inclusion of approved material and that standards are maintained.

The final level of access is that of the network manager. Only one person, Rich Sheridan at Macomb, is at this level. Naturally, this level has all the capabilities of previous levels and more. One example is the network manager's capability to monitor the levels of use and types of use made of SEEKER at each terminal.

Language. Our attention now turns to the command language one uses when working with SEEKER. Basically, the commands are either complete words or abbreviations that match the command function, making them easy to use and recall. One can access SEEKER with only a few basic commands. But variations on these few and some additional commands enable one to use the system more fully.

The first step one would usually take in a search is to access the ERIC descriptor file. This is done by following the SEEKER prompt (=>) with the

word ERIC. One proceeds by responding to a variety of prompts, mentioned previously, the first of which is DESCRIPTOR=⟩ . No true commands are used in the ERIC file. Only descriptor terms; the words and, or, yes, no; or a carriage return are used to communicate your intentions to the program. Answering no to the DO YOU WISH TO CONTINUE=⟩ prompt takes one out of the ERIC file and back into SEEKER with access to the project and news information files.

At this time the only way to examine the descriptors used in an ERIC search is to manually check the print-out produced by the terminal. However, a search record command will soon be added that will enable one to print a list of terms used in a search.

The result of a successful ERIC search is one or more project numbers. The PRO command is used to access the project file in SEEKER. PRO has both automatic search and print functions. Once a project or projects are located by number the records and items tagged to them are printed. PRO alone will yield a complete list of the records of all the projects in the data base with notes following each record to indicate if new information has been entered. This command would rarely be used now that the data base has grown. PRO-n, where n equals a project number, will print the record and associated item numbers and field names for that particular project. Records of several projects can be printed with one command by string numbers. For example, PRO-5, 6, 52 will print projects 5, 6 and 52. Notice that the command and numbers are separated by a dash. The dash is used in most SEEKER commands.

If you are interested enough in a project or projects you may get more information by accessing the news information file. This is done by using

the ITEM command and the item numbers that were tagged to the printed projects. The ITEM command has a double function, search and print, like the PRO command. ITEM-n, where n is an item number, will initiate a search. The user receives the LINEFEED TO TOP OF FORM prompt. After line-feeding is completed, the appropriate record from the news information file will be printed. As with the PRO command, item numbers can be stacked; ITEM-n1, n2,n3 is an acceptable command. An equals sign before the command, =ITEM-20, will keep the program from printing each item on a separate page. An asterisk before the command, *ITEM-20, will yield a print-out in routing format. This command would be used by linkers at each agency.

Print-outs resulting from the PRO and ITEM command include some extra information in addition to the unit record. After each project or item is printed, a code is printed at the bottom of each sheet. Such a code, an example of which is Item 267 [AA/A1] , serves two purposes. The first part of the code, the item number, enables the user to easily relocate the source of the print-out. The second part of the code is taken from the system directory. It indicates which agency entered the item into the system. This can be helpful in evaluation of the autority of an item. In the example given, the code stands for the Macomb Intermediate School District Administration Building. Therefore, this item is assumed to be validated and reliable.

Having a project number, one can receive all information about that project by using the command OLD-n, where n is the project number. Using NEW-n will yield all designated new information tagged to that project. NEW and OLD can be handled the same as ITEM. They can be followed by several project numbers or be modified by a preceding * or =.[6] Since one uses

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[6]SEEKER III User Manual. (Macomb Intermediate School District, Mt. Clemens, Michigan, 1976.)

project numbers with these commands, the program must search the project file. But the commands also print items, which would indicate a search of the news information file also.

The FIND command is the newest addition to the system language. It searches the project file but not by project number. With FIND one can free text search the title, acronym and school district fields of the project file records. FIND-NILES will yield any projects with "Niles" in any of the indicated fields. In this way the system can retrieve a project produced by the Niles Community Schools. The acronym of a project title is searchable in the same way since they are often included in the unit record. FIND-GRIP will retrieve project 27, Guaranteed Reading Improvement Project, known as GRIP. To obtain further information about the retrieved projects, one would continue the search by item number in the news information file.

Eventually the FIND command will have much greater capabilities with the addition of left-, right- and middle-truncation features. As it stands now FIND-NILES will retrieve on Niles Community Schools but not Niles-Bayside Schools because retrieval is limited to a character string surrounded by spaces. Presumably, the truncation symbols will allow one to retrieve both district names with the given command.

PRO, ITEM, NEW, OLD and FIND are commands with search functions. There are a few non-search commands available. Using HELP results in an explanation of the major commands. The command //ER is used to cancel the search commands that have implicit print functions. After using such a command the user is prompted to linefeed the paper to the proper position for receiving the print-out. If one decides the print-out is not necessary after issuing the command, it can be aborted by typing //ER after the LINEFEED prompt. The program will return with a new => prompt.

It was mentioned previously that print-outs of items are marked by a code identifying the agency which input the item. To decipher these codes one must access the system directory by using the DIR command. DIR by itself will print a list of names of participating districts and their assigned codes. DIR- followed by one of the district codes will produce the names of buildings in that district that participate in the system. It will also indicate each building's code. *DIR yields a list of general building and department codes used to build each user's code. The codes are organized with district first, building next and department last. For example, using the directories, one can decipher AB/E/MC to mean all elementary media centers in the Anchor Bay district. More than one terminal in a building or department is further identified by a number. Thus, every terminal is identifiable through the system.

The DIR command is also used when a user places information in the system for routing and must give the computer a coded routing plan. The directory codes are used by the program to direct messages to their destinations.

The last command used is the sign-off which is simply BYE. SEEKER responds by indicating how much terminal time and SEEKER time were used in the session. It does not indicate the cost of the time spent on-line because the system does not charge for use.

Editor.[40] Certain system users may add information to the system, change its format and route it as desired. This is accomplished through the editor program which allows one to manipulate information that has been temporarily

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[40]SEEKER III Editor Manual. (Macomb Intermediate School District, Mt. Clemens, Michigan, 1977.)

stored in a buffered terminal. Only after formatting the information as desired does one use the command that takes it out of temporary storage and sends it into permanent storage in the computer's memory banks. There are four steps to SEEKER's editing process; entering a message, correcting and changing its format, storing the message permanently and routing it. There are quite a few editor commands with complex variations possible with each. One wonders if the average user will need all of these commands. Most likely, the project managers and network manager will make the most use of the balance of the commands, expecially when updating old items.

Access to the editor is gained by using the command EDIT following the usual SEEKER prompt. The program responds with the same prompt. A variation of the command EDIT-n, where n is an existing item number, will yield a print-out of that item. This command is used if changes are to be made in a previously stored message. Note that the EDIT command is not used as a searching command, yet will produce a search and retrieval of an item from the news information file.

At this point a variety of commands can be used after the prompt. Let us assume one is entering a new message. The first step would probably be adjustment of the page format. Several commands are available for this purpose, some of which overrride preprogrammed conditions.

The command WIDTH-n will change the width of the lines on a page from the present seventy-two characters to any number up to eighty characters. LENGTH-n changes the number of lines per page from an automatic maximum of sixty to any smaller number. Various tab positions can be set with TAB-n or TAB-n1,n2,n3. The left line margin is automatically set at position one. MARGIN-n will move the left margin to the position number indicated

and MARGIN-CENTER will move it to the center of the line. The HEADER command is used to print a line of words at the top of each page of the item. The command is used in this form, HEADER-w, where w is a line of words up to seventy-two characters long. TAB and WIDTH must be used before entering any textual material.

Now that the page format has been set as desired, textual material can be entered. The user types the command TEXT after the prompt. The program will now print line numbers before each prompt, as in Table 5. Anything typed in following these line numbers, except for two commands, is considered by the program to be part of the user's message text. The program automatically fits as many words as possible on each line. Sometimes the line as typed on one's paper will be full but the corresponding line in the computer is not. The user, of course, must use the carriage return to continue on a new line. The editor, however, is continuing to fill the previous line, so the old line number is printed again, preceded by a C. This is shown in Table 5. To start a new line in the editor when the previous line is not full one uses the command //PAR on an empty line. Hitting the carriage return moves the editor to a new line which has been assigned a new line number. Similarly, one can move to a new page without having filled the previous one by using //PAGE. These are the only two command words that can be used on numbered lines. One exits this portion of the editor by hitting the carriage return directly after a line number.

Since material typed into the editor is held in temporary storage it is possible to have it printed at the terminal. This allows the user to proofread the newly entered material and decide what changes are needed. The PRINT command, following the = prompt, has three variations that are

used to print the entire text or specified lines. The message may be printed in its final form, as it would be seen when accessed through SEEKER. It may be printed in that form, but with line numbers identifying each line. The line numbers are used with other commands when changes are to be made only in certain lines. Or, the message may be printed exactly as it was typed with each line followed by the line characteristic commands that were input during typing. Table 6 contains an example of the latter print style.

TABLE 5

EDITOR

```
 10=>  As the message is typed in, the editor automatically
C10=>  adjusts every line to fit as many words as
 20=>  possible on each line.

C20=>  //PAR
 30=>
```

SOURCE: *SEEKER III Editor Manual. Macomb Intermediate School District, Mt. Clemens, Michigan, 1977, p. 9.

Once the message has been proofread changes are made by using variations of the REPLACE, INSERT, DELETE, INDENT, LINE and RENUMBER commands. These commands follow the = prompt. The material in which alterations are to be made is in storage and must be made "active" before the changes can occur. So, with each of these commands, one indicates, by line numbers and other means, the portions of text that should become active and available for manipulation.

The REPLACE command does exactly what its name says, replace a specified portion of text with other specified textual material. It is used to replace a single word or group of words in a line, an entire line, several continu-

ous lines in entirety or all occurences of specified words in a series of lines. The new lines are then right justified again. Table 7 contains three examples of the command format. This format is similar to that used with several other commands.

TABLE 6

EDITOR PRINT COMMAND

```
=> *PRINT
LINES/PAGE:      60
COLUMNS/LINE:    72
LINE SPACING:     2
LEFT MARGIN:      1
HEADER:
DESCRIPTION:  CBI PROGRAMMING CONTEST-GRADES K-6

CBI PROGRAMMING CONTEST
(10:  LINE 2, INDENT 24)

FOR STUDENTS IN MACOMB COUNTY
(20:  PARAGRAPH, LINE 2, INDENT 21)

GRADES K-6
(30:  PARAGRAPH, LINE 2, INDENT 30)
```

SOURCE: SEEKER III Editor Manual, Macomb Intermediate School District, Mt. Clemens, 1977, p. 14.

REPLACE can also be used to change the occurences of three text modifiers; PAR, PAG and CAPS. For example, REP-10; PAR will add that modifier to line 10. REP-10; NOPAR will remove the modifier. Again, this can be made to affect any number of lines or the entire text.

The INSERT command has a different function but is handled in basically the same manner as REPLACE. Using INSERT will add new text without changing the existing text. The existing text is moved to accomodate the additional matter and the lines are again right justified. One can deal with single

lines or a series.

TABLE 7

COMMAND FORMAT

=> REP-10 There are three divisions in

This command line means that whatever was entered on line 10 will be changed to the words enclosed in the delimiters .

=> REP-40 you ; the user

In this case, in line 40 the first occurence of the word you will be changed to the user.

=> REP-20 we , 40 result. ; That result was expected.

Running from line 20 through 40 is a passage beginning with We and ending with result.; the passage will be changed to That result was expected.

SOURCE: SEEKER III Editor Manual. Macomb Intermediate School District, Mt. Clemens, Michigan, 1977, p. 15.

DELETE is handled in the same format as REPLACE. It will delete an entire line, a passage in a continuous series of lines or all occurences of some text in a series of lines.

INDENT and LINE are simpler commands than the previous three, with fewer options available to the user. To use INDENT one specifies the line or series of lines to be indented and the position to which the text should be moved. So, INDENT-10, 40; 8 will indent line numbers 10 through 40 to the eigth position. All paragraphs will be indented by IND-PAR;5. One may center lines in this fashion; IND-50, CEN.

LINE is used to indicate the number of blank lines that are to precede specified lines of text. The command can affect the spacing before a single

line, a series of lines, all lines in the material or the first line of each new page or paragraph. LINE-PAR; 5 will result in five carriage returns before each paragraph. LINE can also be used to center text vertically on a page.

Two other commands can be used during the formatting procedure. RENUMBER will change the sequence of line numbers from intervals of ten to any specified interval. Or, if in correcting lines during the formatting procedure, one has deleted lines and so lost line numbers, the entire text can be renumbered in sequence. The last command, APPEND, is used to add an existing news item to the end of the message being entered.

If the message needs further work, but the user has no time to complete the work during the current sign-on time, it can be temporarily stored for two weeks by use of the INCOMPLETE command. The editor will assign the message a temporary item number which is used following the EDIT command to later retrieve the unfinished message. One can even access a directory of temporary items stored by one's building by using the command TEMP.

When all of the formatting work is finished the message is sent into permanent storage, in which it is maintained for a maximum of three weeks, by entering the command COMPLETE. At this, the editor responds with prompts which the user must fill with certain information. After the DESCRIPTOR=⟩ prompt one enters a one line description of the message. After EXPIRATION DATE=⟩ is entered any desired date up to a maximum of three weeks away. Next, NEWS ITEM ROUTING ROUTE=⟩ is to be filled, in the proper format, with codes indicating the desired recipients for the message. If the user does not know the codes, the DIRECTORY command will work in the editor. If the word HOT is entered after the ROUTE=⟩ prompt and before the routing code,

the message will automatically be printed at the designated terminals upon log-in under the heading "HOT NEWS." No further prompts appear and now the editor reports that the message has been transferred to the news information file and indicates its assigned item number.

Instead of using COMPLETE to store an item and assign it an unused new item number one can use the COPY command to delete an old message and re-assign its item number all in one step. COPY-97 will replace the old message tagged with number 97 with the newly entered message. ERA-97 would simply erase that message completely.

Finished with the editor, one leaves it by entering the command EXIT. This returns the user to the SEEKER operating program. Complete sign-off is accomplished by using the BYE command described earlier.

Quite some space has been taken with the explanation of the editor. This decision was made because quite some time must have been used to develop all the options of this feature. Actually, the discussion in this paper was only a very simple description of all the command forms. Prose editors with which this writer is familiar seem to have quite complex structure. Perhaps there is no way to justify inclusion of one formatting feature without including another. If one is dealing with prose, the program's objectives require that a user have the option to indent, capitalize or make a variety of other punctuation and positional changes. Therefore, one tries to allow for all possibilities.

Because of its open two-way communication functions, SEEKER III needs some editing functions for users. Undoubtedly many would be totally confused by the complex command forms. This editor could not have been designed with the users in mind, but rather with the more experienced project

managers in mind, especially considering the attempts at simplicity in the main operating program features.

EVALUATION AND CONCLUSIONS

The preceding discussion covered the features of the system as known and understood by this writer. It is obvious that a great attempt has been made to devise practical and simple solutions to meet the objectives of the SEEKER project. There are some problems, such as indexing errors and misspellings, which are to be expected, and will be corrected as time passes. Many capabilities have been included in anticipation of expanded and quite sophisticated use in future. Therefore, some areas, like the editor, are quite elaborate. It will remain to be seen if the future will bring use of these features.

Since SEEKER is at the forefront of automation at the local level in education, there is no possibility, at this time, for comparative evaluation. However, this writer is very pleased with the programming and features incorporated in SEEKER and the quality of work involved in its development. Also, based on the readings examined for this paper and personal experiences in schools, this writer is convinced that SEEKER and other similar projects will serve a very real need in education.

It is interesting for this writer, a media specialist, to note that at no point are school media personnel involved or expected to be involved with the SEEKER information network. This has also been the case in the development of automated information services in other fields as library personnel are not involved unless a library subscribes to such a service. If local educational systems do become a reality and encompass a wider variety of information, there is a possible role for a media specialist in

the network. One could assist the curriculum administrator and building administrator in the task of disseminating information to keep the teaching staff well informed. After all, this is the already established role of the media specialist, who is generally well accepted by the staff in just that role. Why not make use of that existing relationship? Perhaps that familiarity would be a factor in the acceptance of the new information dissemination procedures.

BIBLIOGRAPHY

Banach, William J. Macomb Intermediate School District, Mt. Clemens, Interview, August, 1977.

Banach, William J. and Hartsig, Thomas. "SEEKER, Communication by Computer." AEDS Monitor, (September 1974).

Banach, William J. Unpublished report. N.d. (Typewritten.)

Bhola, H.S. Diffusion of Educational Innovation. Morristown, N.J.: General Learning Press, 1977.

Burchinal, Lee G. ERIC: Development Through June, 1968. Bethesda, Md.: ERIC Document Reproduction Service, ED 020 450, 1968.

Clemens, Thomas. Information Transfer and Research Utilization in Education. Bethesda, Md.: ERIC Document Reproduction Service, ED 039 005, 1970.

Grimes, George A Proposed Educational Information System for the State of Michigan. Bethesda, Md.: ERIC Document Reproduction Service, ED 039 000, 1970.

Huberman, A.M. Understanding Change in Education: an Introduction. Paris: UNESCO, 1973.

Moir, Olga. Wayne County Intermediate School District, Wayne, Michigan. Interview, August, 1977.

Moir, Olga and Grimes, George. Wayne County Intermediate School District, Wayne, Michigan. Interview, July, 1977.

"Position Paper on Computer Services for Michigan Education." Michigan Department of Education, 1976.

Project to Identify and Disseminate Outstanding Michigan Title III Programs. Bethesda, Md.: ERIC Document Reproduction Service, ES 002 126, 1968.

Quick Time Education Information Retrieval in Wisconsin. Bethesda, Md.: ERIC Document Reproduction Service, ES 002 164, 1968.

SEEKER III Editor Manual. Mt. Clemens, Mi.: Macomb Intermediate School District, 1976.

SEEKER III User Manual. Mt. Clemens, Mi.: Macomb Intermediate School District, 1977.

Sheridan, Rich. Macomb Intermediate School District, Mt. Clemens, Michigan. Interview, August, 1977.

25 Educational Projects That Work. Michigan Department of Education, n.d.